CLAIMS

1. A jarring apparatus that multiplies tension to provide greater overpull, the apparatus comprising:

a. an outer tube;

b. an inner tube moveable within the outer tube, attached at a first upper end to the pipe string, and to the tool on its lower end;

c. a first energizing fluid compressible within a space between the outer and inner tubes when the inner tube is raised to a first up cocked position; and

d. differential surface areas within the space containing the first fluid for multiplying the upward force against the tool upon expansion of the compressed fluid.

2. The apparatus in claim 1, wherein the apparatus further comprises a first anvil and metering sub engaged to a hammer and compression sub engaged to a multiplier sub and then to a upper spline sub.

3. The apparatus in claim 2, wherein there may be further provided a plurality of hammer and compression subs to increase the jarring force within the tool.

4. The apparatus in claim 1, wherein the compressible fluid further comprises nitrogen gas or other suitable compressible inert fluid.

5. The apparatus in claim 1, further comprising means for allowing the outer tube to move upward in a controlled manner further comprises a metering chamber for allow fluid flow therethrough.

6. The apparatus in claim 1, wherein the upward jarring force is created by the expansion of the

compressed fluid within the tool to effect the tension multiplier effect.

7. A jarring apparatus comprising:

a. a first tube;

b. a second tube moveable within the first tube and attached to the stuck tool;

c. a compressible fluid housed within a chamber between the first and second tubes;

d. means for moving the second tube in relation to the first tube so that the compressible fluid is compressed within the apparatus in an energized position;

e. means for allowing the compressed fluid within the apparatus chamber to expand for providing a jarring contact between the first and second tubes;

f. differential surface areas within the chamber between the first and second tubes for multiplying the upward force against the lodged tool upon expansion of the compressed fluid.

8. The apparatus in claim 7, wherein the apparatus further comprises a first anvil and metering sub, a hammer and compression sub, a multiplier sub and an upper spline sub.

9. The apparatus in claim 7, wherein there is further provided a plurality of hammer and compression subs to enhance the jarring effect of the apparatus.

10. The apparatus in claim 7, wherein the differential areas in the apparatus multiplies the overpull by a factor of 1.1 to 15 to define a greater jarring effect.

11. The apparatus in claim 7, further comprising metering fluid for metering the movement of the hammer

portion before the expansion of the compressed fluid causes the hammer to jar against the anvil portion of the tool.

12. A jarring method that multiplies tension to provide greater overpull, the method comprising the following steps:

a. providing a first tube attached to the lower tool;

b. providing a second tube as an outer tube, having a fluid space between the tubes, for defining differential areas within the space between the first and second tubes for multiplying the upward force against the lodged tool.

c. providing a compressible fluid within the fluid space;

d. moving the first tube so that the fluid is compressed within the fluid space to define an energized position;

e. allowing the second tube to move in relation to the first tube so that the compressed fluid is allowed to expand;

f. jarring the first tube against the second tube as a result of the expanding fluid to provide a jarring effect to the stuck tool.

13. The method in claim 12, further providing the step of providing a second fluid within the tool to meter the movement of the second tube as it moves from a first energized position to a second fired position.

14. The method in claim 12, further comprising the step of resetting the tool to an energized position to repeat steps e and f.

15. A process for multiplying the force against an object, comprising the following steps:

providing a compressive inner tube;

compressing a fluid by upward pull on the inner tube by a long stroke acting on a first piston area; and

allowing the fluid to expand against a second piston area over a relatively short stroke, wherein upon expansion of the fluid the upward force is multiplied by a factor of 1.2 to 15 as a jarring force.

16. The process in claim 15, wherein the long strong multiplied by nominal tension yields a short stroke multiplied by the factor of 1.2 to 15 or greater.

17. An apparatus for providing up and down jarring to tools within a borehole, comprising:

a. a first external body section;

b. a piston rod within the first body section defining a first fluid chamber therebetween;

c. an internal shaft within a portion of the body section defining a second fluid chamber therebetween;

d. a compressible fluid housed within said first and second chambers;

e. means for exerting a compressive force on said first fluid chamber to overcome the compressive force within the second fluid chamber to the extent that the compressive force in the first chamber forces the body section and internal shaft to jar against one another imparting an upward jarring motion to the lodged tool.

18. An apparatus for providing up and down jarring to tools lodged within a borehole, comprising:

a. a first external body section;

b. a piston rod within the first body section defining a first fluid chamber;

c. an internal shaft within a portion of the body section defining a second fluid chamber;

d. a compressible fluid housed within said first and second chambers;

e. means for exerting a compressive force on said second fluid chamber to overcome the compressive force within the first fluid chamber to the extent that the compressive force in the second chamber forces the body section and internal shaft to jar against one another imparting a downward jarring motion to the lodged tool.

19. A jarring method within a bore hole, comprising the steps of:

a. providing a tool having a first external body section; a piston rod within the first body section defining a first fluid chamber; and an internal shaft within a portion of the body section defining a second fluid chamber;

b. filling the first fluid chamber with a quantity of compressible fluid to provide a fluid pressure within the first fluid chamber;

c. filling the second fluid chamber with a quantity of compressible fluid to provide a fluid pressure within the second fluid chamber;

d. compressing the fluid in the first fluid chamber to a psi exceeding the psi in the second fluid chamber;

e. allowing the fluid in the first fluid chamber to expand with a force capable of exerting an upward jarring force between the internal shaft and the body section.

20. A method of jarring a tool in a bore hole, comprising the steps of:

a. providing a tool having a first external body section; a piston rod within the first body section defining a first fluid chamber; and an internal shaft within a portion of the body section defining a second fluid chamber;

b. filling the first fluid chamber with a quantity of compressible fluid to provide a fluid pressure within the first fluid chamber;

c. filling the second fluid chamber with a quantity of compressible fluid to provide a fluid pressure within the second fluid chamber;

d. compressing the fluid in the second fluid chamber to a psi exceeding the psi in the first fluid chamber;

e. allowing the fluid in the second fluid chamber to expand with a force capable of exerting a downward jarring force between the internal shaft and the body section.

21. A jarring apparatus attachable to a lodged tool within in a borehole, the apparatus comprising:

a. a body, having a first piston portion and a second internal shaft portion within the body, and defining chambers therein;

b. compressible fluid within the chambers for being selectively compressed so as to allow the apparatus to impart upward or downward jarring force against the lodged tool; and

c. hydrostatic pressure within the borehole imparting additional force when the apparatus imparts downward jarring force within the borehole.

22. A method of jarring a tool within in a borehole, comprising the steps of:

a. providing a tool within the borehole, having a body, which includes a first piston portion and a second internal shaft portion, and defining chambers therein;

b. delivering compressible fluid into each of the chambers;

c. compressing the fluid in one chamber to overcome the compressive force in a second chamber for imparting

upward or downward jarring force against the lodged tool when the compressed force is released; and

d. combining hydrostatic pressure within the borehole with the released compressive to impart additional force when the apparatus imparts downward jarring force within the borehole.

23. A jarring apparatus that multiplies tension to provide greater overpull, the apparatus comprising:

a. an outer tube;

b. an inner tube moveable within the outer tube, attached at a first upper end to the pipe string, and to the tool on its lower end;

c. a first incompressible fluid within a space between the outer and inner tubes when the inner tube is raised to a first up cocked position;

d. a spring means positioned in the apparatus to energize the tool as the fluid is pressurized within the space between the outer and inner tubes; and

e. differential surface areas related to the fluid and spring for multiplying the upward force against the tool upon expansion of the compressed fluid and release of the spring means.

24. The apparatus in claim 23, herein hydrostatic pressure is balanced by ambient pressure acting on upper piston and the end of the rod and the lower piston.

25. The apparatus in claim 23, wherein a firing mechanism of the tool comprises balls moving from a first position within first grooves when the tool is in a cocked position and to a second position into firing grooves when the tool is fired.

26. A jarring apparatus that multiplies tension to provide greater overpull, the apparatus comprising:

a. an outer tube;

b. an inner tube moveable within the outer tube, attached at a first upper end to the pipe string, and to the stuck tool on its lower end;

c. a first incompressible fluid within a space between the outer and inner tubes when the inner tube is raised to a first up cocked position;

d. a spring means positioned in the apparatus to energize the tool as the fluid is pressurized within the space between the outer and inner tubes; and

e. means for releasing the inner tube from the cocked position to a firing position.

e. differential surface areas related to the fluid and spring for multiplying the upward force against the lodged tool upon release of the spring means.

27. The apparatus of Claim 26, further comprising a rod secured to the end of the inner tube which allows the inner tube to be adjustable in length in order to change the travel distance prior to the jarring mechanism firing.

28. The apparatus in Claim 26, wherein there may be further included adjustable anvil pins on the apparatus.

29. The apparatus in Claims 26, wherein hydrostatic pressure in the tube is balanced by ambient pressure acting on an upper piston and the lower end of the rod and a lower piston.

30. The apparatus in claim 26, wherein a firing mechanism of the tool comprises balls moving from a first position within first grooves when the tool is in a cocked position and to a second position into firing grooves when the tool is fired.

31. An apparatus for jarring downward by multiplying

tension to provide a greater downward force, the apparatus comprising:

a. an outer housing;

b. an inner housing;

c. a tension rod moveable within the inner and outer housings, the tension rod attached at a first upper end to a line;

d. a spring member positioned within an annular space between the outer and inner tubes extending to a lower anvil member;

e. a incompressible fluid within a space between the tension rod and the inner housing so that when the tension rod is pulled upward, the incompressible fluid exerts a compression force on the spring member;

e. means for releasing the tension rod from the raised cocked position to energize the spring with a downward jarring force.

32. The apparatus in claim 31, wherein there are provided differential surface areas related to the fluid and spring for multiplying the upward force against the lodged tool upon release of the spring means.

33. The apparatus in Claims 31, wherein hydrostatic pressure in the tube is balanced by ambient pressure acting on an upper piston and on the lower end of the rod and a lower piston.

34. The apparatus in claim 31, wherein a firing mechanism of the tool comprises balls moving from a first position within first grooves when the tool is in a cocked position and to a second position into firing grooves when the tool is fired.

35. The apparatus in claim 31, whereby the tool can be activated without external attachments to the wellbore, wherein the reactive force required to energize the spring

means is supplied by the weight of the tool itself.